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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/674,784 | 09/30/2003 | Bernd Hofflinger | 4965-000163 | 4456 |
| 27572 7590 10/18/2007 HARNESSE, DICKEY & PIERCE, P.L.C. P.O. BOX 828 BLOOMFIELD HILLS, MI 48303 | | | EXAMINER JERABEK, KELLY L | |
| | | | ART UNIT 2622 | PAPER NUMBER |
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/674,784

Applicant(s)

HOFFLINGER ET AL.

Examiner

Kelly L. Jerabek

Art Unit

2622

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 August 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-7, 9-14, 16, 18-26, 28-34 and 36 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-7, 9-14, 16, 22-26, 28-34 and 36 is/are rejected.
- 7) ☒ Claim(s) 18-21 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 September 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Information Disclosure Statement

The information disclosure statement (IDS) submitted 2/21/2007 is in compliance with the provisions of 37 CFR 1.97 and has been considered by the Examiner:

However, the Examiner notes that JP 8-9256, has not been considered, as it has not been submitted.

Response to Arguments

Applicant's arguments filed 8/9/2007 have been fully considered but they are not persuasive.

Response to Remarks:

Applicant's arguments regarding claims 1 and 34 (Amendment page 13) state that the Shinotsuka reference fails to teach or suggest an approximation characteristic that has a section of a parabola for at least one value range. The Examiner respectfully disagrees. Shinotsuka discloses an approximation characteristic (characteristic curve) that includes a linear characteristic and a logarithmic characteristic (figures 3 and 9). In figures 3 and 9 it can be seen that both the linear function region and the logarithmic

function region of the characteristic constitute a section of a parabola. The Examiner notes that the language "an approximation characteristic that has a section of a parabola for at least one value range" is broad in nature and the Examiner is giving it its broadest reasonable interpretation. The Examiner maintains that both the linear function region and the logarithmic function region of the characteristic constitute a "section of a parabola".

Applicant's arguments regarding claims 6 and 26 (Amendment page 13) state that the Shinotsuka fails to teach or suggest approximation characteristics for correcting actual image values, wherein said approximation characteristics have at least two value ranges which are specified such that the characteristics are approximately linear with respect to the logarithm of the optical intensity within the respective value ranges. The Examiner respectfully disagrees. Shinotsuka discloses two value ranges (linear function region and logarithmic function region) that are specified such that the actual characteristics and the nominal characteristic each are approximately linear with respect to the logarithm of the optical intensity impinging on the image cells within the respective value ranges (figure 9, col. 11, line 29-col. 12, line 8). The Examiner notes that the claim language is broad in nature and the Examiner is giving the claim its broadest reasonable interpretation.

Claim Objections

Claims 6 and 26 are objected to because of the following informalities: Claims 6 and 26 disclose "FPN correction". The abbreviation "FPN" is not clear and should be rewritten as "fixed-pattern noise". Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-7, 9-14, 16, 22-26, 28-34 and 36 are rejected under 35 U.S.C. 102(b) as being anticipated by Shinotsuka et al. US 6,191,408.

Re claims 1 and 34, Shinotsuka discloses a digital camera comprising an image sensor (1) and a method of correcting fixed pattern noise in image signals generated by image cells of an image sensor (1), each image signal comprising a plurality of instantaneous image values which approximately correspond to the logarithm of an optical intensity impinging on the image cells (figures 3 and 9), the method comprising

the steps of: defining at least two value ranges (linear function region and logarithmic function region) of possible instantaneous image values that the image signals might take at a specific instant of time (col. 5, lines 12-44; figures 1 and 3), providing a plurality of sets of correction coefficients (correction coefficient generating means 34 and 44) for calculating corrected values (by using corrective calculation sections 35 and 45) from the instantaneous values (the correction coefficients vary according to a given incident illumination L_s), wherein the sets of correction coefficients are adapted to transform the instantaneous value onto a predefined approximation characteristic (linear characteristic and logarithmic characteristic), determining in which of the at least two value ranges a specific instantaneous value of the image signals is located, selecting a specific set of correction coefficients from the plurality of sets of correction coefficients as a function of the result of step c) (the correction coefficients vary according to a given incident illumination L_s), and calculating the corrected value for the image signal using the set of correction coefficients selected (via corrective calculation sections 35, 45) (col. 9, line 40-col. 11, line 27; figures 5-8). In addition Shinotsuka states that the approximation characteristic (characteristic curve) is a section of a parabola for at least one value range (logarithmic function region) (figures 3 and 9).

Re claim 2, Shinotsuka discloses an approximation characteristic (characteristic curve) is a section of a parabola for a first value range (logarithmic function region) and a straight line for a second value range (linear function region), the first value range covering two decades of brightness (figures 3 and 9; col. 5, lines 12-50).

Re claim 3, Shinotsuka states that the steps c) to e) are carried out separately for the image signals of each cell (calculations are carried out for each photosensor of the array) (col. 9, line 40-col. 11, line 27).

Re claim 4, Shinotsuka states that an individual set of correction coefficients (correction coefficient generating means 34 and 44) is used for each value range (linear function region and logarithmic function region) and for each image cell from the plurality of image cells (calculations are carried out for each photosensor of the array) (col. 10, lines 9-32, col. 10, line 55-col. 11, line 17).

Re claim 5, Shinotsuka states that the two value ranges (linear function region and logarithmic function region) are individual for each image cell (col. 5, lines 12-50).

Re claims 6 and 26, Shinotsuka discloses a device and method for FPN correction of image signals generated by image cells of an image sensor (1), comprising the following steps, a) determining in which value range out of at least two value ranges (linear function region and logarithmic function region) a value of an image signal is located at a predetermined instant of time (col. 5, lines 12-44; figures 1 and 3); and determining a corrected value for the image signal as a function of the result according to step a), wherein the step of determining the corrected value according to step b) comprises the sub-steps of b1) selecting correction coefficients (correction coefficient

generating means 34,44) from a plurality of sets of correction coefficients as a function of the result according to step a); and calculating the corrected value (corrective calculation sections 35,45) for the image signal by using the selected correction coefficients (col. 9, line 40-col. 11, line 27; figures 5-8), wherein the correction coefficients (correction coefficient generating means 34 and 44) are determined from a comparison of an actual characteristic (actual logarithmic and linear characteristic), which specifies a relationship between an optical intensity (L_s) impinging on the respective image cell (photosensor 4) and the image signal generated, with a nominal characteristic (gradient calculation section 32,42 performs this operation) for each image cell (col. 8, line 55-col. 9, line 39; col. 9, line 40-col. 10, line 16; col. 10, line 41-col. 11, line 11), and wherein the two value ranges (linear function region and logarithmic function region) are specified such that the actual characteristics and the nominal characteristic each are approximately linear with respect to the logarithm of the optical intensity impinging on the image cells within the respective value ranges (figure 9, col. 11, line 29-col. 12, line 8).

Re claim 7, see claim 3.

Re claims 9-10, see claim 4.

Re claim 11, see claim 5.

Re claim 12, Shinotsuka states that a step of calculating a corrected value for an image signal by using a selected correction coefficient is executed for all image cells by means of transformation equations (provided by multiplier, subtraction circuit, divider, gradient calculation, etc.) that only differ due to different correction coefficients selected (col. 9, line 40-col. 11, line 27).

Re claims 13 and 14, Shinotsuka states that reference offset data are stored in a memory and the stored offset data is subsequently used to calculate correction coefficients which are then used in correction calculation sections (35,45) (col. 8, line 65-col. 9, line 4; col. 9, line 48-col. 11, line 27). Therefore, the transformation equations are specified by an arrangement of logic elements (adders, multipliers, subtraction circuit, divider, gradient calculation, etc.) which are supplied with the correction coefficients from a memory.

Re claim 16, Shinotsuka states that the nominal characteristic is determined by computing a mean value (reference offset data V_{fk}) from the actual characteristics of the image cells (col. 9, lines 5-8).

Re claim 22, Shinotsuka states that the correction coefficients (generated by correction coefficient generating means 34 and 44) transform the value of the image signal onto a predefined approximation characteristic (logarithmic and linear characteristics) (figure 9; col. 10, line 9-32, col. 11, line 4-col. 12, line 5).

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the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Contacts

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kelly L. Jerabek whose telephone number is **(571) 272-7312**. The examiner can normally be reached on Monday - Friday (8:00 AM - 5:00 PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lin Ye can be reached on **(571) 272-7372**. The fax phone number for submitting all Official communications is **(571) 273-7300**. The fax phone number for submitting informal communications such as drafts, proposed amendments, etc., may be faxed directly to the Examiner at **(571) 273-7312**.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

KLJ



LIN YE
SUPERVISORY PATENT EXAMINER